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10/781,897	02/20/2004	Piero Patrone Bonissone	52493.000364	4221

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EXAMINER
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WONG, ERIC TAK WAI

ART UNIT	PAPER NUMBER
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4172

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/781,897	<b>Applicant(s)</b> BONISSONE ET AL.	
	<b>Examiner</b> Eric T. Wong	<b>Art Unit</b> 4172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02/20/2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/18/2005</u> .                                               | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Claims 1-24 are pending. The following is a first Office action on the merits of claims 1-24.

#### ***Claim Objections***

2. Claims 5 and 19 objected to because the claims make reference to “the selecting at least one portfolio”. Claim 1 and claim 15, from which claim 5 and 19 depend, claim the efficient frontier is used in investment decisioning. However, the step of selecting a portfolio from the generated efficient frontier is not expressly claimed.
3. Claim 13 objected to because the relative term “sparsely” is used in the claim.

#### ***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 15 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 15 claims a user identifying the gap in the efficient frontier, the gap then being filled to supplement the efficient frontier. The human action involved does not obtain reproducible results and therefore fails as being concrete.

#### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5, 13-14 rejected under 35 U.S.C. 102(b) as being anticipated by Ray et al. (US Pat No. 6,018,722).

***Regarding claim 1:***

Ray et al. discloses:

- Performing a first multi-objective optimization process, based on competing objectives, to generate an efficient frontier of possible solutions, (see column 4/line 66 – column 5/line 18);
- Observing the generated efficient frontier, (see column 4/line 66 – column 5/line 18);
- Based on the observing, identifying an area of the efficient frontier in which there is a gap, (see column 6/lines 13-35);
- Effecting a gap filling process by which the efficient frontier is supplemented in the area of the gap, the efficient frontier being used in investment decisioning, (see column 6/lines 13-35).

***Regarding claim 2:***

Ray et al. further discloses wherein the efficient frontier is presented to a human observer in the form of a graphical representation, (see figure 6/element 620 and column 5/lines 38-40).

***Regarding claim 3:***

Ray et al. further discloses wherein the efficient frontier is presented to a computer processor in the form of data, (see column 5/lines 38-40).

***Regarding claim 5:***

Ray et al. further discloses selecting the at least one portfolio in the area that was filled in by the gap filling process, (see column 6/lines 38-40).

***Regarding claim 13:***

Ray et al. further discloses wherein the gap is an area that is sparsely populated by possible solutions, (see column 6/lines 13-30).

***Regarding claim 14:***

Ray et al. further discloses wherein in the gap filling process, the efficient frontier is substantially completed in the area by filling in the efficient frontier with additional solutions, (see column 6/lines 38-40).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 6-12, and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Ray et al. in view of Eklund's paper entitled "Multiobjective Visible Spectrum Optimization: A Genetic Algorithm Approach".

***Regarding claim 4:***

Ray et al. does not disclose wherein the gap filling process is performed using a Target Objectives Genetic Algorithm (TOGA) process. Eklund teaches using Target Objectives Genetic Algorithm (TOGA) for multi-objective optimization, (see abstract). It would have

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been obvious to one skilled in the art at the time of invention to modify Ray et al. with Eklund. One would have been motivated to make such modification because TOGA provides a quick calculation of multiple optimal points.

***Regarding claim 6:***

Ray et al. does not disclose:

- providing a set of target vectors;
- generating a series of chromosomes, evaluated on the basis of the target vectors, over multiple generations.

Eklund teaches:

- providing a set of target vectors, (see page 58, last paragraph);
- generating a series of chromosomes, evaluated on the basis of the target vectors, over multiple generations, (see page 58, last paragraph).

It would have been obvious to one skilled in the art at the time of invention to modify Ray et al. with Eklund. One would have been motivated to make such modification to provide a quick calculation of multiple optimal points.

***Regarding claim 7:***

Ray et al. in view of Eklund as applied to claim 6 above does not disclose wherein the method further includes evaluating the fitness of each chromosome until a population with an acceptable fitness is determined so as to fill in the identified gap. Eklund teaches wherein the method further includes evaluating the fitness of each chromosome until a population with an acceptable fitness is determined so as to fill in the identified gap, (see page 23). It would have been obvious to one skilled in the art at the time of

invention to modify the invention of claim 6 above with Eklund. One would have been motivated to make such modification to provide a measure of suitable quality for the chromosomes in the genetic algorithm.

***Regarding claim 8:***

Ray et al. in view of Eklund as applied to claim 6 above does not disclose wherein the method further includes placing targets in the areas of the gaps. Eklund teaches wherein the method further includes placing targets in the area of the gaps, (see page 90, second paragraph). It would have been obvious to one skilled in the art at the time of invention to modify the invention of claim 6 above with Eklund. One would have been motivated to make such modification in order to obtain optimal solutions at a particular combination of objectives.

***Regarding claim 9:***

Ray et al. in view of Eklund as applied to claim 6 above does not disclose the providing a set of target vectors and generating a series of chromosomes, based on the target vectors, over multiple generations is effected in a Target Objectives Genetic Algorithm (TOGA) process. Eklund teaches the providing a set of target vectors and generating a series of chromosomes, based on the target vectors, over multiple generations is effected in a Target Objectives Genetic Algorithm (TOGA) process, (see page 39 last paragraph and page 40). It would have been obvious to modify the invention of claim 6 above with Eklund. One would have been motivated to make such modification to obtain optimal solutions.

***Regarding claim 10:***

Ray et al. does not disclose the method further includes placing targets in the areas of the gaps. Eklund teaches the method further includes placing targets in the areas of the gaps, (see page 90, second paragraph). It would have been obvious to one skilled in the art at the time of invention to modify the invention of Ray et al. with Eklund. One would have been motivated to make such modification in order to obtain optimal solutions at a particular combination of objectives.

***Regarding claim 11:***

Ray et al. in view of Eklund as applied to claim 10 above does not disclose wherein the effecting a gap filling process by which the efficient frontier is filled in the area of the gap is performed using a Target Objectives Genetic Algorithm (TOGA) process. Eklund teaches wherein the effecting a gap filling process by which the efficient frontier is filled in the area of the gap is performed using a Target Objectives Genetic Algorithm (TOGA) process. It would have been obvious to one skilled in the art at the time of invention to modify the invention of claim 10 above with Eklund. One would have been motivated to make such modification because TOGA provides a quick calculation of multiple optimal points

***Regarding claim 12:***

Ray et al. in view of Eklund as applied to claim 10 above does not disclose wherein once the targets are placed, the method further including generating feasible points around each target using a Target Objective Genetic Algorithm (TOGA) process. Eklund teaches wherein once the targets are placed, the method further including generating feasible points around each target using a Target Objective Genetic



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Algorithm (TOGA) process, (see page 26). It would have been obvious to one skilled in the art at the time of invention to modify the invention of claim 10 above with Eklund.

One would have been motivated to make such modification to identify the region where solutions are possible.

***Regarding claim 24:***

The claim is drawn to the limitations of claims 1, 6, and 7 and is therefore similarly rejected.

10. Claims 15-16, 19, and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Ray et al. in view of Champion et al. (US Pat. No. 5,126,936).

***Regarding claim 15:***

Ray et al. discloses:

- an efficient frontier generation portion that performs a first multi-objective optimization process, based on competing objectives, to generate an efficient frontier of possible solutions, (see column 4/line 66 – column 5/line 18);
- a visual tool by which a user observes the generated efficient frontier, (see figure 6, element 620)
- a gap filling portion, the gap filling portion effecting a gap filling process by which the efficient frontier is supplemented in the area of the gap, the supplemented efficient frontier being used in investment decisioning, (see column 6/lines 13-35).

Ray et al. does not disclose based on the observing, the user identifying an area of the efficient frontier in which there is a gap. Champion et al. discloses based on the observing, the user identifying an area of the efficient frontier in which there is a gap, (see column 4, lines 3-21). It would have been obvious to one skilled in the art at the time of invention to modify Ray et al. with Champion et al. One would have been motivated to make such modification in order to obtain user preference.

***Regarding claim 16:***

Ray et al. further discloses wherein the visual tool presents the efficient frontier to the user in a graphical format, (see column 5, lines 33-48).

***Regarding claim 19:***

Ray et al. further discloses selecting the at least one portfolio in the area that was filled in by the gap filling process, (see column 6/lines 38-40).

***Regarding claim 23:***

The claim is drawn to the limitations of claim 15 and is therefore similarly rejected.

11. Claim 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Ray et al. in view of Champion et al., further in view of Official Notice

***Regarding claim 17:***

Official Notice is taken that it would have been obvious to one skilled in the art at the time of invention to modify the invention of claim 15 with wherein the visual tool presents the efficient frontier to the user in a numerical data format. One would have

been motivated to make such modification to present accurate information to the user.

12. Claims 18 and 20-22 rejected under 35 U.S.C. 103(a) as being unpatentable over Ray et al. in view of Champion et al., further in view of Eklund.

***Regarding claim 18:***

The claim is drawn to the additional limitations of claim 4 and is therefore similarly rejected.

***Regarding claim 20:***

The claim is drawn to the additional limitations of claim 6 and is therefore similarly rejected.

***Regarding claim 21:***

The claim is drawn to the additional limitations of claim 7 and is therefore similarly rejected.

***Regarding claim 22:***

Ray et al. in view of Champion et al. as applied to claim 15 does not disclose wherein the gap filling process, the efficient frontier is smoothed out in the area by filling in the efficient frontier with additional solutions. Eklund teaches wherein the gap filling process, the efficient frontier is smoothed out in the area by filling in the efficient frontier with additional solutions, (page 134). It would have been obvious to one skilled in the art at the time of invention to modify the invention of claim 15 with Eklund. One would have been motivated to make such modification in order to achieve improved calculation speed.

***Conclusion***

13.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric T. Wong whose telephone number is (571) 270-3405. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dixon can be reached on (571) 272-6803. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Naeem Haq/  
Primary Examiner, Art Unit 4172

Eric T. Wong  
Examiner  
Art Unit 4172

Nov 07